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ABSTRACT

The present invention provides a complete artificial intelligence system for the acquisition and analysis of nucleic acid array hybridization information. The system is divided into at least one central data processing facility and one or more user facilities, linked by encrypted network connections or similar links. Each user facility may include an optical scanning system to collect hybridization signals from a nucleic acid array, an image processing system to convert the optical data into a set of hybridization parameters, a connection to a data network, and a user interface to display, manipulate, search, and analyze hybridization information. This system reads data from a gene chip or DNA microarray, or a proteomics chip, analyzes test results based on maintained parameters, evaluates patient risk for various ailments, recommends methods of treatment, presents information to medical and/or private individuals, and notifies test participants when new treatment becomes available. The test results may be used to perform individual diagnostics, longitudinal studies, population studies, or a wide variety of statistical analyses of patient data. The automated artificial intelligence system is a real time, dynamic decision making tool that can be used not only in conjunction with a clinical analysis system, but also with the information obtained in a research and development environment. Access to this system allows the user(s) to look at both clinical and non-clinical information. Most importantly, the system is intelligent and possesses the capability to interpret the information obtained. The system presents the information primarily via a secured encrypted Web interface, such as the Internet. The information is also presented in a retrievable format, such as electronic or paper format, using various computing technologies.

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